

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A mass analyzer for analyzing ions, having an ion transmission device comprising[[,]]:

- a) a set of elongated rods, having a first end and a second end, said set of elongated rods positioned along an axis, defining an inscribed circle between the rods, said inscribed circle having a radius r_0 , wherein the radius at the first end and at the second end is different[[,]];
- b) means for applying a RF voltage to said elongated rods[[,]]; and
- c) at least one rod including at least one opening through which at least some of said ions are ejected along said rod, the mass of an ion is determined by the location where the ion is ejected along said at least one rod.

Claim 2 (original): A mass analyzer in claim 1, wherein the set of elongated rods comprises at least one pair of opposite rods.

Claim 3 (original): A mass analyzer in claim 1, wherein the set of elongated rods have a quadrupole configuration.

Claim 4 (canceled)

Claim 5 (currently amended): A mass analyzer in claim [[4]]_1, wherein the opening is a slot.

Claim 6 (canceled)

Claim 7 (currently amended): A mass analyzer in claim ~~[[2]]~~ 3, further comprising means for applying a DC offset voltage applied to said rods.

Claim 8 (currently amended): A mass analyzer in claim ~~[[6]]~~ 20 or 7, further comprising means for applying a supplementary AC voltage across one of the pairs of rods.

Claim 9 (original): A mass analyzer in claim 8, further comprising two array detectors each positioned approximately behind one of the elongated rods to which the supplementary AC voltage is applied.

Claim 10 (original): A mass analyzer as claimed in claim 3, wherein the rods include at least one rod displaced from an exact quadrupole configuration, to cause the generation of higher order field components.

Claim 11 (original): A mass spectrometer system having more than one mass analyzer, comprising a mass analyzer according to claim 1.

Claim 12 (original): A mass analyzer in claim 11 having a means for storing ions for pulse injection into said mass analyzer.

Claim 13 (original): A mass analyzer in claim 11 having a means for collision induced dissociation for injecting fragmented ions into said mass analyzer.

Claim 14 (original): A mass analyzer in claim 11 having a means for ion mobility separation for injecting ions into said mass analyzer.

Claim 15 (currently amended): A method mass analyzing ions, said method comprising:
a) providing a set of elongated rods, having a first end and a second end, and located round an axis defining an inscribed circle between the rods with a

radius r_0 , and varying the radius r_0 along the length of the set of elongated rods;

- b) admitting ions into said first end of said rod set[[,]];
- c) transmitting ions through the set of elongated rods, at least one rod includes at least one opening; and
- d) ejecting at least some of said ions through said at least one opening, the mass of an ion is determined by the location where the ion is ejected along said at least one rod.
- ~~e) transmitting ions through the set of elongated rods, whereby at least some of said ions become unstable at a location along the set of elongated rods dependent on the mass to charge ratio thereof;~~
- ~~d) permitting the unstable ions to be ejected substantially orthogonal to the axis;~~
- ~~e) detecting the ejected unstable ions after the ejected unstable ions exit the set of elongated rods.~~

Claim 16 (original): A method according to claim 15 wherein, in step (b), ions are admitted from a collision cell.

Claim 17 (original): A method according to claim 15 wherein, in step (b), ions are admitted from an ion mobility device.

Claim 18 (original): A method according to claim 16 wherein, in step (b), an ion mobility device precedes the collision cell.

Claim 19 (original): A method as claimed in claim 15, including in step (b), admitting ions into the set of elongate rods with desired characteristics of position, direction and velocity, relative to the axis, to promote detection of ions of interest.

Claim 20 (new): A mass analyzer in claim 1, further comprising a detector positioned along said at least one rod to detect the intensity and position of the ions that are ejected through said at least one opening.

Claim 21 (new): A mass analyzer in claim 2, wherein said detector is an array detector.

Claim 22 (new): A method according to claim 15 further comprising detecting the intensity and position of the ions that are ejected through said at least one opening.